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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/589,923	08/17/2006	Stefan Amon	AT04 00008US1	3761

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EXAMINER

HORNING, JOEL G

ART UNIT	PAPER NUMBER
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1792

NOTIFICATION DATE	DELIVERY MODE
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06/11/2009

ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

ip.department.us@nxp.com

Office Action Summary	Application No. 10/589,923	Applicant(s) AMON ET AL.	
	Examiner JOEL G. HORNING	Art Unit 1792	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 13 May 2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-19 is/are pending in the application.
- 4a) Of the above claim(s) 11-19 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-10 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>08-17-2006</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Election/Restrictions

1. Claims 11-19 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention, there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on 13 May, 2009.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. **Claims 1-9** are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding claims 1, 6 and 9, each of these claims contains the phrase "in particular" which renders the claims indefinite because it is unclear whether the limitation(s) following the phrase are part of the claimed invention. See MPEP § 2173.05(d).

Claims 2-5, 7 and 8 are rejected for being dependent upon a rejected claim.

For the purposes of examination, this phrase will be interpreted to not be further limiting on the claim, but merely presenting examples.

3. **Claims 7** is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 7 recites the limitation "different waiting times" in lines 1-2. There is insufficient antecedent basis for this limitation in the claim since this requires that two waiting times be compared, but there is only antecedent basis for one waiting time (i.e. only one waiting time is used in the process). For the purposes of examination it will be assumed that applicant meant (as is required for claim 8) to compare the waiting time of the process with a hypothetical different process performed with different processing parameters (e.g. a different membrane).

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. **Claims 1, 2 and 4** are rejected under 35 U.S.C. 102(b) as being anticipated by Nonaka (JP-04120900, as shown by the Derwent English abstract).

The instant claims are directed towards a method for producing a membrane, wherein at least one liquid plastic is applied to at least in parts of at least one surface of the membrane and wherein the liquid plastic is cured.

Nonaka is directed towards a method for stiffening a speaker diaphragm by coating it with a polymer layer. In the process, a liquid solution (70% toluene) of a polymer is spray coated (**claim 2**) onto both faces of the polymer diaphragm of a speaker. The polymer is then cured by exposure to UV light (**claims 1 and 4**). Thus all features of these claims are well taught.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
 2. Ascertaining the differences between the prior art and the claims at issue.
 3. Resolving the level of ordinary skill in the pertinent art.
 4. Considering objective evidence present in the application indicating obviousness or nonobviousness.
5. **Claim 3** is rejected under 35 U.S.C. 103(a) as being unpatentable over Nonaka (JP-04120900, as shown by the Derwent English abstract) in view of Brennan (US 2716462, hereafter referred to as "the '462 patent").

The instant claim further requires that different amounts or types of liquid plastic be applied to different parts of the membrane.

Nonaka does not teach varying the amounts of polymer deposited at different parts of the speaker diaphragm.

However, the '462 patent is also directed towards methods of stiffening speaker diaphragms by supplying a coating to the diaphragm (col 1, lines 15-31). It further teaches applying different amounts of polymer reinforcement at different places on the diaphragm (using "radial filaments") so that the diaphragm will have

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both the proper strength in its rim portion to support the body and the required flexibility in the body section in order to properly vibrate as a speaker (col 2, lines 5-19).

Thus it would have been obvious to a person of ordinary skill in the art at the time of invention to deposit the polymer stiffening film in different amounts at different places on the speaker diaphragm in order to be able to produce the required strength in the rim and the required flexibility in the body section in order to have an effective speaker (**claim 3**).

6. **Claims 5 and 7** are rejected under 35 U.S.C. 103(a) as being unpatentable over Nonaka (JP-04120900, Derwent English abstract) in view of Kishima (US 4668588).

Nonaka teaches using a UV curable liquid polymer solution which includes a solvent (toluene) to form polymeric layer, but does not discuss removing the solvent before curing the polymer layer.

However, Kishima is also directed towards using UV curable polymer solutions (UV curable paint) in order to form polymeric layers (paint layers) (abstract). It teaches that after the liquid polymer layer is deposited the solvent should be removed, by heating the layer for some time, before UV curing (col 5, lines 45-58) in order to improve the surface properties of the resulting polymer layer (col 6, lines 7-12).

Thus it would have been obvious to a person of ordinary skill in the art at the time of invention to heat the deposited liquid polymer layer for some time before UV

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curing it in order to remove the solvent from the layer and produce a cured polymer layer with better surface properties (**claim 5**).

7. Regarding **claim 7**, as indicated by Kishima, the waiting time (drying time) is a result effective variable for determining the degree of drying (for a given solvent, volume of solvent and temperature). Additionally, drying time is also a result effective variable for determining the length of the coating process. Shorter drying times result in a faster process, but may not dry the coating sufficiently. Thus, it would have been obvious to one of ordinary skill in the art at the time of invention to choose the instantly claimed ranges of “between 1 and 15 seconds” through process optimization, since it has been held that when the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. See *In re Boesch*, 205 USPQ 215 (CCPA 1980). Additionally, this indicates that this chosen optimal processing time would be different than the optimal processing time for a process with a different processing parameters (e.g. a different amount of solvent or temperature).

8. **Claims 7 and 8** are rejected under 35 U.S.C. 103(a) as being unpatentable over Nonaka (JP-04120900, Derwent English abstract) in view of Brennan (US 2716462, hereafter referred to as “the ‘462 patent”) further in view of Kishima (US 4668588).

Claim 8 further requires that the coating have “raised areas and depressions” and that greater waiting times be used for a roughened surface than a smooth surface. As discussed for claim 3, Nonaka in view of the ‘462 patent shows that it is obvious to have different coating thicknesses (“raised areas and depressions”) on

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the speaker. As applied to claim 7 in its previous rejection, Kishima teaches that the waiting time (drying time) is a result effective variable. Thus, it would have been obvious to one of ordinary skill in the art at the time of invention to choose the instantly claimed ranges of “greater than the waiting time in the case of a membrane having a smooth surface” through process optimization, since it has been held that when the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. See *In re Boesch*, 205 USPQ 215 (CCPA 1980) (**claims 7 and 8**).

9. **Claims 6 and 10** are rejected under 35 U.S.C. 103(a) as being unpatentable over Nonaka (JP-04120900, Derwent English abstract) in view of Brennan (US 2408038, hereafter referred to as “the ‘038 patent”).

Claim 6 further requires that a membrane or the device for applying the liquid plastic be moved during application of the liquid plastic.

Nonaka teaches spraying the liquid plastic onto the speaker membrane, but does not describe exactly how that operation occurs.

However, the ‘038 patent is also directed towards spraying liquid polymers (binder) (col 2, lines 49-52) onto speaker diaphragms (col 1, lines 6-9). It teaches that one suitable way of doing this is by placing the membrane on a turntable and rotating it (about its axis) while spraying the liquid polymer on the membrane. By spraying the coating this way, a substantially uniform coating is produced (col 5, lines 14-20).

Thus it would have been obvious to a person of ordinary skill in the art at the time of invention to rotate the membrane during spraying in order to produce a more controlled uniform coating of the membrane (**claim 6**).

Furthermore, the '038 patent teaches performing multiple layer deposition steps in order to produce the desired film thickness and to enable the deposition of more complex thickness profiles (masking) (col 5, lines 21-32).

Thus it would have been obvious to a person of ordinary skill in the art at the time of invention to deposit the desired film thickness on the membrane by performing a succession of layer deposition steps (deposit and cure one polymer layer and then deposit and cure another layer) instead of a single step since it was a known way to deposit layer of the desired thickness and would produce predictable results and in order to enable the formation of more complicated thickness profiles on the rotating membrane (**claim 10**).

10. **Claims 9 and 10** are rejected under 35 U.S.C. 103(a) as being unpatentable over Nonaka (JP-04120900, Derwent English abstract) in view of Bozak (US 3093207).

Claim 9 further requires that the thickness ratio of the deposited layer and the membrane be between 0.5:1 and 3:1.

Nonaka does not appear to teach what the thickness ratio should be. However, Bozak is also directed towards methods for coating speaker diaphragms with polymer layers in order to stiffen the diaphragm (col 2, lines 22-53). Bozak further teaches that the ratio of the thickness of the deposited layers and the membrane will effect the resonance of the diaphragm. The ratio should be high

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enough to produce the desired stiffening of the diaphragm to dampen undesirable internal vibrations, but small enough not to dampen out desired sounds (col 1, lines 23-33 with col 2, line 65 to col 2, line 11). Put another way this ratio is a result effective variable for determining the desired acoustics of the speaker diaphragm. The ratio should be large enough to dampen undesired sounds, while small enough not to dampen the desired ones.

Thus, it would have been obvious to one of ordinary skill in the art at the time of invention to choose the instantly claimed ranges of “between 0.5:1 and 3:1” through process optimization, since it has been held that when the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. See *In re Boesch*, 205 USPQ 215 (CCPA 1980) (**Claim 9**).

11. Regarding **claim 10**, Nonaka does not appear to teach depositing multiple polymer layers onto the membrane. However, Bozak teaches that the polymer layer should be applied to both sides (twice) of the membrane in order to produce the best acoustics (col 2, lines 33-45).

Thus it would have been obvious to a person of ordinary skill in the art at the time of invention to apply the liquid plastic to the diaphragm and cure it a number of times (coat one side of the diaphragm and repeat the coating process on the other side of the diaphragm) in order to produce the best acoustics (**claim 10**).

12. **Claim 10** is rejected under 35 U.S.C. 103(a) as being unpatentable over Nonaka (JP-04120900, Derwent English abstract).

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Claim 10 further requires that the liquid plastic coating process be repeated a number of times. Nonaka discloses the claimed invention except for repeating the coating process a number of times. It would have been an obvious matter of design choice to repeat the coating process a number of times, since it has been held that mere duplication of the essential working parts of a device involves only routine skill in the art. *St. Regis Paper Co. v. Bemis Co.*, 193 USPQ 8.

Conclusion

13.No current claims are allowed.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JOEL G. HORNING whose telephone number is (571) 270-5357. The examiner can normally be reached on M-F 9-5pm with alternating Fridays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael B. Cleveland can be reached on (571)272-1418. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/J. G. H./
Examiner, Art Unit 1792

/Michael Cleveland/
Supervisory Patent Examiner, Art Unit 1792